Claims:

1. A communications node for establishing a plurality of logically distinct communications links running through the node contemporaneously to one or more remote nodes, the communications node comprising:

input switch means;

output switch means;

a plurality of communications resources connected between said input and output switch means, said plurality of communications resources including at least first and second communications resources adapted to deliver different communication services including packet-switched and circuit-switched services;

control means associated with said input switch means and said output switch means to establish logically distinct links through the node, wherein each said link is configurable to selectively include one of the at least first and second communication resources.

2. A communications node as in claim 1, wherein said communications resources include signal processing means.

3. A communications node as in claim 1 or 2, wherein said communications resources include packet processing means.

4. A communications node as in any preceding claim, wherein said communications resources include a first plurality of communications resources adapted to serve one of said service types and a second plurality of communications resources adapted to another of said service types.

5. A communications node as in any preceding claim, wherein at least a first communications resource is arranged to process a component of a synchronous input

signal, and at least a second of said communications resources is arranged to process a component of an asynchronous input signal.

6. A communications node as in any preceding claim, wherein a plurality of packets from a signal flow is processed by said second communications resource.

7. A communications node as in any preceding claim, wherein said input switch means is arranged to receive at least one input signal partitioned such that it comprises a plurality of signal components, wherein said plurality of logically distinct links through the node are established by means of logically associated ones of the signal components.

8. A communications node as in claim 7, wherein said output switch means is configurable to receive signal components and switch said signal components onto at least one output signal which partitions said signal components, wherein said logical links through the node are extended by means of logically associated ones of the components of the output signal.

9. A communications node as in claim 7 or 8, wherein said signal components are partitioned by means of one or more of: time division multiplexing; frequency division multiplexing; code division multiplexing; and space division multiplexing.

10. A communications node as in any of claims 7 to 9, wherein said input switch means is configurable to switch a plurality of partitioned input signals contemporaneously.

11. A communications node as in any of claims 7 to 10, wherein said output switch means is configurable to switch a plurality of partitioned output signals contemporaneously.

12. A communications node as in any preceding claim, wherein one or more of said logical links spans more than two nodes such that it establishes a logical network.

13. A communications node as in claim 12, wherein one or more of said logical networks is initiated or terminated at a node.

14. A communications node as in claim 12, wherein one or more of said logical networks is initiated or terminated at an end terminal.

15. A communications node as in claim 13, wherein one or more of said logical networks is initiated and terminated at a node.

16. A communications node as in claim 14, wherein one or more of said logical networks is initiated and terminated at end terminals.

17. A communications node as in any preceding claim, wherein said input switch means and said output switch means are configurable to circuit switch communications data on a logical link such that low latency transfer of said data is achieved.

18. A communications node as in any preceding claim, wherein pluralities of said logical links are programmably aggregated and disaggregated by said node.

19. A communications node for receiving at least one input signal comprising a plurality of components, each said component comprising part of a logical link over a portion of a communications network, the communications node comprising:

ingress means for receiving said at least one input signal;

egress means for outputting at least one output signal comprising one or more components of said input signal;

one or more signal processing means connected between the ingress means and egress means, for receiving components of said at least one input signal and processing said components in accordance with a predetermined communications process;

first switching means configurable to selectively cause a signal output from said ingress means to bypass one or more of said signal processing means en route to said egress means;

second switching means configurable to direct signals output from said signal processing means to said egress means.

20. A communications node as in claim 19, wherein said first switching means is configurable to provide a connection between said ingress means and said second switching means, which connection bypasses all of said signal processing means.

21. A communications node as in claim 19 or 20, wherein there is provided a plurality of signal processing means connected between said ingress means and said egress means, each one of said plurality of signal processing means being arranged to receive at least components of said at least one signal and to process the received components in accordance with a predetermined communications process.

22. A communications node as in claim 21, wherein first and second ones of said plurality of signal processing means are arranged to process received components in accordance with a different predetermined communications process.

23. A communications node as in claim 21 or 22, wherein different ones of the signal processing means are arranged to process signal components at one or more layers selected from layers 1, 2, 3, 4, 5, 6 and 7 of the open systems interconnect model.

24. A communications node as in any of claims 21 to 23, wherein said first switching means is configurable to supply a component of the at least one input signal to a first signal processing means and another component of the at least one input signal to a second signal processing means.

25. A communications node as in any of claims 19 to 24, wherein the timing of an input signal is synchronous with a timing reference signal of the node.

26. A communications node as in any of claims 19 to 25, wherein an input signal is time division multiplexed such that said components are a plurality of time slots, corresponding time slot defining part of a logical link.

27. A communications node as in claim 26, wherein frame pulses occurring at predefined timing intervals delimit a number of time slots to be buffered and/or switched between frame pulses.

28. A communications node as in any of claims 25 to 27, wherein a plurality of synchronous input signals are received at said ingress means and said output signal from said egress means comprises components from different ones of the input signals.

29. A communications node as in any of claims 19 to 28, wherein the second switching means supplies a plurality of output signals to said egress means, and wherein first and second output signals of the plurality of output signals comprise components from one input signal.

30. A communications node as in any of claims 19 to 29, wherein the rate of receipt of an input signal is independent of a timing reference signal of the node.

31. A communications node as in claim 30, wherein an input signal comprises packets.

32. A communications node as in any of claims 19 to 31, wherein at least one processing means comprises a packet processing pipeline.

33. A communications node as in claim 32, wherein said second switching means is arranged to switch a packet supplied from the or each packet processing means in accordance with destination information associated with the packet by the packet processing means.

34. A communications node as in any of claims 31 to 33, wherein a packet from an input signal is switched such that it appears as a packet in a plurality of output signals of the egress means.

35. A communications node as in any of claims 31 to 33, wherein a plurality of packet flows each on a different logical link of an input signal are switched such that they appear as packet flows on different output signals of the egress means.

36. A communications node as in any of claims 31 to 33, wherein a plurality of packet flows on a logical link of first and second input signals are switched such that they appear as packet flows on different logical links of an output signal of the egress means.

37. A communications node as in any of claims 31 to 33, wherein a plurality of packet flows on a logical link of an input signal are switched such that they appear as packet flows on logical links of different output signals of the egress means.

38. A communications node as in claim 31 or 32, wherein an input signal comprises packets belonging to a plurality of packet flows each packet flow being

carried on a different logical link, wherein said first switching means is operable to demultiplex the input signal to provide individual packet flows and supply a combined packet flow therefrom to an appropriate packet processing pipeline for processing in accordance with a predetermined packet processing protocol.

39. A communications node as in claim 31 or 32, wherein said second switching means is programmed with switching information such that it receives packets from said first switching means which have bypassed said packet processing means and directs them without reference to destination information in the packet.

40. A communications node as in any of claims 19 to 39, wherein said at least one input signal comprises a first input signal which is timed synchronously with a timing reference signal of the node and a second input signal having a rate of receipt independent of said timing reference signal of the node.

41. A communications node as in claim 40, wherein said at least one input signal comprises a first plurality of input signals timed synchronously with a timing reference signal of the node and a second plurality of input signals having a rate of receipt independent of said timing reference signal of the node.

42. A communications node for receiving and transmitting signals comprising sets of signal components transmitted at intervals, wherein a set comprises a number of signal components partitioned from one another and wherein concatenated signal components in adjacent sets establish a number of logical links over a portion of a communications network, said node comprising:

input switch means;

output switch means;

control means connected to said output switch means and programmable to cause selected ones of the partitioned signal components of a set to be aggregated, such that said aggregated signal components define an aggregated logical link having

a bandwidth corresponding to a predetermined multiple of the signal component bandwidth.

43. A communications node as in claim 42, further comprising control means connected to said input switch means and programmable to cause partitioned signal components which have been aggregated at a remote node to be disaggregated.

44. A communications node as in any of claims 42 or 43, further comprising a plurality of signal processing means connected between said input switch means and said output switch means, wherein said input switch means is configurable to supply at least a component of an input signal to a selected one of said signal processing means.

45. A communications node as in claim 44, wherein one or more of said node processing means is arranged to process at least a signal component received on an aggregated logical link after signals transferred thereto have been disaggregated.

46. A communications node as in claim 44, wherein one or more of said node processing means arranged to process at least a component of a signal received on an aggregated logical link without disaggregating the partitioned signal components defining the aggregated logical link.

47. A communications node as in claim 44, wherein at least one signal processing means is arranged to support one or more of Ethernet, ATM, IP, IP over ATM, IP over Ethernet or unpacketised data.

48. A method of setting up a logical link across a portion of a network comprising a node according to any of claims 1, 19 or 42 including sending a packet to a plurality of nodes.

49. A method of setting up an aggregated logical link as defined in claim 42 including sending a packet to a plurality of nodes.